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IN THE

Supreme Court of the United States

FESTO CORPORATION,

Petitioner,

v.

SHOKETSU KINZOKU KOGYO KABUSHIKI CO., LTD., a/k/a SMC CORPORATION and SMC PNEUMATICS, INC.,

Respondents.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS – UNITED STATES OF AMERICA AS AMICUS CURIAE IN SUPPORT OF NEITHER PARTY

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BRIEF OF INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS – UNITED STATES OF AMERICA (IEEE-USA) AS AMICUS CURIAE IN SUPPORT OF NEITHER PARTY[1]

INTEREST OF AMICUS CURIAE

The Institute of Electrical and Electronics Engineers - United States of America (IEEE-USA) promotes the career and technology policy interests of the nearly two hundred and thirty thousand electrical, electronic and computer engineers who comprise its United States membership. IEEE-USA is an organizational unit of The Institute of Electrical and Electronics Engineers, Inc. (IEEE), a New York Corporation. The vision of the IEEE is to advance global prosperity by fostering technological innovation and promoting the engineering community worldwide. The IEEE promotes the engineering process of creating, developing, integrating, sharing and applying knowledge about electronics and information technologies and sciences for the benefit of the profession and humanity.

IEEE-USA members serve on the "front line" of the United States patent system. They are pioneer inventors, inventors of novel improvements and designers of innovative refinements of the state of the art. They are entrepreneurs and employees of firms that acquire, license and exploit the intellectual property assets resulting from those activities. For these reasons, the IEEE-USA is deeply concerned that

1. In accordance with Supreme Court Rule 37.6, IEEE-USA states that this brief was authored in its entirety by the counsel listed on the cover and that counsel to a party did not author this brief in whole or in part. No person or entity other than the amicus curiae and its counsel made a monetary contribution to the preparation or submission of this brief. The consents of the parties are being lodged herewith.

sufficient incentive be given to inventors to innovate without unduly chilling the creation and development of non-infringing technology and improvements.

IEEE-USA members and other engineers routinely advise firms about the relative merit of the state of the art as compared with the merit and risk of competing lines of research and design. That advice, and with it progress itself, will be impacted favorably or adversely, depending on how the nation executes its patent policies.

As an organization dedicated to promoting sound technology and public policy applicable to United States electrical, electronics and computer engineers, the IEEE-USA has a compelling interest in ensuring that legal principles governing patent policy comport with the policies set forth by the Founders. Rules of the patent system intimately affect the practices of and advice given by engineers, and the IEEE-USA respectfully suggests that the patent law doctrines sanctioned by this Court should be rendered so far as possible in a manner that not only promotes progress in the manner intended by the Constitution but that is both comprehensible and practical to the professionals who provide that progress.

By virtue of the practical experience of its members, the IEEE-USA respectfully believes that its views will aid this Court in the resolution of the issues raised in this appeal. In accordance with the by-laws of the IEEE, the IEEE-USA Board of Directors has authorized the filing of this brief.

INTRODUCTION AND SUMMARY OF ARGUMENT

Consistent with the charge of the Patent Clause of the United States Constitution, Congress crafted a patent scheme that promotes the progress of the "useful Arts." The patent instrument designed by Congress seeks to achieve this constitutional end by providing both a protective function to inventors and a notice function to the public. This Court has recognized these fundamental policies on numerous occasions, and the questions presented by this proceeding require the Court to determine how these policies are best effectuated when the judicially created doctrine of equivalents is limited by application of another judicially created doctrine, prosecution history estoppel.

Neither *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushito Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000), nor *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 (Fed. Cir. 1983), define a workable and just framework for balancing patents' protective and notice functions. The IEEE-USA concurs with arguments made by the parties and other amici criticizing the "absolute bar" and "flexible bar" approaches set forth in these cases. The absolute bar of *Festo* improperly treats the notice function of a patent as paramount, severely diluting necessary patent protections and disproportionately encouraging minor variations, or mere copies, over genuine technological improvements and more fundamental, pioneering innovations. The flexible bar of *Hughes*, on the other hand, heightens the protective function in a manner that sacrifices much of the notice function, resulting in uncertainty regarding patented bounds that discourages incremental innovation through technological improvements. Under either rule, progress is not best served.

The IEEE-USA suggests that the flexible bar's deficiencies may be cured without resorting, as the Federal Circuit did below, to the absolute bar. As detailed hereafter, the IEEE-USA strongly recommends that this Court adopt instead a "foreseeable bar," by which the doctrine of equivalents should apply, notwithstanding a limiting amendment during a patent's prosecution, unless the limiting effect of the language with respect to an accused device would have been foreseeable at the time of the amendment. Such a rule is supported by case law from this Court and the Federal Circuit and presents the best means of effectuating patents' protective and notice functions to promote all forms of progress, including both pioneering inventions and technological improvements.

Unlike the flexible and absolute bars, the foreseeable bar is workable. It would be comprehensible to the professionals governed by the Patent Act and readily applied and reviewed by the judiciary. It also avoids the most extreme examples of injustice associated with *Festo* and *Hughes*. Most importantly, it best serves the policies underlying the Patent Clause and the Patent Act by most fully promoting progress of the "useful Arts."

ARGUMENT

I. The Progress Of The Useful Arts Is Not Adequately Promoted Under Either The Absolute Bar Or Flexible Bar Rules Advanced By The Parties.

The Patent Clause broadly directs that the Congress shall have the power to "promote the Progress of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. CONST. Art. I, § 8, cl. 8. Crafting a statutory scheme to achieve this objective is the work of Congress, while enforcing that scheme in the manner

that best comports with congressional intent and constitutional purpose is the obligation of the judiciary. *Graham v. John Deere Co.*, 383 U.S. 1, 5-6 (1966).

The parties to this case present the Court with polar opposite views regarding how limiting amendments made to the claims of a patent during its prosecution affect a patent's scope and, thus, its enforceability. As the Court is aware, the Federal Circuit previously adopted the petitioner's position and has now adopted the respondent's position. In the IEEE-USA's view, neither position adequately fulfills the purposes embodied in both the Patent Clause and the Patent Act, which encourage both technological improvements and pioneering inventions through a careful balance of patents' protective and notice functions.

A. Inventors Contribute to Progress Through Both Pioneering Inventions And Technological Improvements.

The chief aim of the Patent Clause is to promote the public welfare by encouraging advancements in knowledge. *Mazer v. Stein*, 347 U.S. 201, 219 (1954). Innovation generally takes one of two basic forms: pioneering inventions and technological improvements. The Patent Clause and the Patent Act must be viewed to encourage both types of innovation, each of which is critical to the continued advancement of science and, thus, the public good.

A pioneering invention can be defined as something that performs a function never before performed – "a wholly novel device, or one of such novelty and importance as to mark a distinct step in the progress of the art. . . ." *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 561-62 (1898). By comparison, technological improvements are useful, though often minor, advances over the previously

existing technology. However, even minor changes to prior art may be wholly unobvious before an invention is disclosed and of fundamental importance to the usefulness of an invention. The most useful and novel inventions and improvements may be progressive steps that are, in turn, dependent upon other previous steps of prior invention. HENRY PETROSKI, THE EVOLUTION OF USEFUL THINGS 45 (1992).

Technological improvements may be the result of independent discoveries or intentional efforts to "design around," and thereby avoid the claims of, a patent. In either case, progress is served through innovation. Indeed, unlike copyists, who merely attempt to mimic a device and add nothing to the public body of knowledge, those who invent new devices by intentionally designing around a patent nonetheless advance the public welfare and fulfill the purpose of the Patent Clause. *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 36 (1997) (contrasting "the intentional copyist making minor changes to lower the risk of legal action" with "the incremental innovator designing around the claims, yet seeking to capture as much as is permissible of the patented advance."); *see also Slimfold Mfg. Co. v. Kinkead Indus. Inc.*, 932 F.2d 1453, 1457 (Fed. Cir. 1991) (Rich, J.) ("Designing around patents is, in fact, one of the ways in which the patent system works to the advantage of the public in promoting progress in the useful arts, its constitutional purpose.").

Ultimately, whether deemed pioneering inventions or technological improvements, all innovations build upon information already known to the public. All inventors have the fortune of standing on the shoulders of the proverbial giants who preceded them. *See Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 477-78 & n.28 (1984) (noting, in copyright case, that each person builds on the work of

predecessors); Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29 (1991). As Justice Story explained well over a century ago: in literature, science, and art, there can be few things, if any, that are strictly new and original throughout. *Emerson v. Davies*, 8 F. Cas. 615, 619 (C.C.D. Mass. 1845).

While both rely to some extent on prior discoveries, pioneering inventions and technological improvements differ dramatically in their frequency. The former are relatively uncommon by their nature, which relies on unprecedented, breakthrough discoveries. It is only the rare invention that strikes out in a sufficiently uncharted direction to qualify as a "wholly novel device." Thus, progress largely takes the form of technological improvements.

Technological improvements may be derived from either pioneering inventions or prior technological improvements. When a pioneering invention leads the way into a new art, technological improvements often follow in a flurry, as inventors seek to maximize the pioneering device's utility by building and improving upon its previously unknown advances. It is this flurry of minor innovations that places technological improvements on par with their more revolutionary counterparts, though the social contribution of a technological improvement may on occasion rival that of pioneering inventions. Generally, pioneering advances provide great leaps in society's collective progress, while technological improvements provide the multitudes of incremental steps necessary to realize the full potential of major, as well as minor, discoveries.

Accordingly, both pioneering inventions and technological improvements must be encouraged, to the exclusion of neither. This bedrock principle should guide the Court in interpreting the patent system to promote the progress of the "useful Arts."

B. Patent Law Should Balance the Protective And Notice Functions And Thereby Promote Progress Through Both Pioneering Inventions And Technological Improvements.

All intellectual property law attempts to balance creators' rights to control their creations and society's right to utilize those creations. *See* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989 (1997). In the specific context of patent law, this act is carried out, and "Progress" is best promoted, by the careful balancing of the competing patent functions of dynamic protection and notice to the public. Each is fundamental, and it is only by their harmonious interplay that patent law can encourage both technological improvements and pioneering inventions.

The protective function of a patent, the constitutionally mandated right of its holder to exclude all others from practicing the invention for a limited time, is the principal feature of the patent system. *Bloomer v. McQuewan*, 55 U.S. (14 How.) 539, 549 (1852). In a capitalist market, the lure of obtaining a monopoly on a commercially profitable invention induces research, development, and, ultimately, progress in the form of new knowledge. *See Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974). The Patent Act offers this inducement by expressly prohibiting persons other than the patentee from making, using, offering to sell or selling a patented device. 35 U.S.C. § 271(a).

The notice function of a patent requires inventors to disclose a full and clear description of the invention, an enabling disclosure and the "best mode" of carrying it out so that the invention may be made and used by any person skilled in the art. 35 U.S.C. § 112; *Kewanee Oil*, 416 U.S. at 480-81. Patents thus serve to inform the public of the precise

nature of the protected subject matter, placing that knowledge in the public domain subject only to the limited intrusion of the patentee's exclusivity right. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989). Concomitantly, patents notify the public of what subject matter is not claimed in a patent. *McLain v. Ortmayer*, 141 U.S. 419, 424 (1891) ("The object of the patent law in requiring the patentee to [distinctly claim an invention] is not only to secure to him all to which he is entitled, but to apprise the public of what is still open to them."). Thus, patent disclosure enriches the public domain through a useful description of the invention, and patent claims provide subsequent inventors with a description of the subject matter that lies within and without the exclusive possession of the patent holder.

The protective and notice functions of patents exist in some tension. The scope of the patent is defined by its descriptive, written claims. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996). These claims are solely within the patentee's command, but a competing inventor can avoid literal infringement by developing a new device that distinguishes the patented invention through slight modifications to its claims. Because the language of claims can never perfectly describe an invention or anticipate all the ways in which it might be modified, patents' protective function calls for claims to be read broadly. This prevents insubstantial modifications from escaping a patent's scope of exclusivity. At the same time, the notice function calls for claims to be read in a manner narrow enough to give meaningful effect to the limiting nature of the patentee's chosen language. These respective ends are achieved, or at least furthered, by two competing, judicially-created doctrines: the doctrine of equivalents and prosecution history estoppel.

First recognized by this Court in *Winans v. Denmead*, 56 U.S. 330 (1854), and expounded upon by the Court in *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950), the doctrine of equivalents holds that a product or process that does not literally infringe on a patented device may be found to infringe if the accused device is found to embody a substantial equivalent of the patented device. The concept of equivalence protects a patent's value by enlarging the patent's scope to encompass devices whose variations from the patent's literal language are insubstantial. Recently, in *Warner-Jenkinson Co. Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997), this Court reaffirmed the validity of the doctrine of equivalents, while at the same time seeking to cabin its reach within reasonable bounds by limiting the doctrine's application to elements of an invention's individual claims, rather than the invention as a whole. *Id.* at 29-30. This Court also noted that the doctrine of equivalents, when applied broadly, conflicts with patents' notice function. *Id.* at 29 ("[t]here can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement").

Prosecution history estoppel limits the doctrine of equivalents by preventing a patentee from arguing equivalents with respect to subject matter the patentee surrendered during prosecution of the patent. *Warner-Jenkinson*, 520 U.S. at 30-31; *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 135-37 (1942). The doctrine of prosecution history estoppel ensures that, to the extent possible, patents mean what they say. It prohibits patentees from obtaining a patent by representing to the United States Patent and Trademark Office that the patent's scope is narrow, and then arguing otherwise to a court. Prosecution history estoppel is consistent with the notice function of

patents because it allows third parties to rely on the public record of the patent prosecution. *Cf. White v. Dunbar*, 119 U.S. 47, 51 (1886) (patent claims may not be treated "like a nose of wax, which may be turned and twisted in any direction").

Application of these doctrines in a manner that elevates either the protective function or the notice function above the other directly affects the incentives, and disincentives, to innovate. Where the balance is tilted toward the protective function, patentees receive exclusivity beyond the literal language of their patents' claims, but inventors have less notice of an existing patent's scope. The resulting uncertainty discourages technological improvements because the outer margins of a patent's claims remain undefined, and the risk of infringing through a device that is found to encompass not a patent's literal claims but their substantial equivalents is not quantifiable. *See* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990) (warning that an overbroad doctrine of equivalents can stifle improvement); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989 (1997) (same).

Where the balance tilts too far toward the notice function, a near opposite problem occurs. A patent's scope is so well defined in connection with the literal language of its claims that the patentee lacks protection from insubstantial modifications that amount to little more than a fraud on the patent. The incentive to advance knowledge only slightly, if at all, becomes great, given the heightened certainty that modestly modified devices will not infringe. At the same time, the value of pioneering inventions, along with the incentive to produce them, is substantially diminished by would-be inventors' concerns that their rights will be

immediately diluted in the marketplace by competitors who have made, at best, insubstantial changes and, at worst, mere copies.

In sum, enforcing the doctrine of equivalents and prosecution history estoppel in a manner that balances patents' protective and notice functions is the optimal means of effectuating the constitutional command to promote the useful arts. Only through a careful balance of these functions will inventors be encouraged to innovate through both pioneering inventions and technological improvements.

C. The Absolute Bar And Flexible Bar Approaches To Prosecution History Estoppel Advanced By The Parties Fail To Balance Patents' Protective And Notice Functions And To Encourage Both Pioneer And Incremental Innovations.

Sitting en banc, and openly cognizant of its role under 28 U.S.C. § 1295(a) as the nation's exclusive court of appeal for patent matters, the Federal Circuit in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000), substantially modified the law regarding the consequences attendant to the application of prosecution history estoppel. In doing so, the Federal Circuit rejected its own prior view of the estoppel's effects, thereby overruling a series of Federal Circuit cases dating back to *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 (Fed. Cir. 1983).

The parties and the amici who participated at the jurisdictional stage of the instant proceeding voiced thoroughly divergent views regarding the correctness of the Federal Circuit's change in position. Those supporting the decision believe that the manner of applying prosecution history estoppel under *Hughes* and its progeny is unworkable in light of the realities of modern litigation practice. Those

supporting the prior rule believe that the manner of applying prosecution history estoppel under *Festo* is no less unworkable in light of the realities of modern invention practice. The IEEE-USA believes that both criticisms are valid, particularly inasmuch as they each address the lack of balance each rule gives patents' protection and notice functions and the concomitant disincentive each rule brings to creating both pioneering inventions and making technological improvements.

Hughes Aircraft Co. v. United States

The Federal Circuit in *Hughes* acknowledged that circuit court decisions predating the Federal Circuit's establishment took differing views on what range of equivalents, if any, would be available to a patentee where prosecution history estoppel applied. *Hughes* held that patentees who are estopped to assert infringement based on subject matter surrendered by amendment during prosecution may still claim some range of equivalents, with the available spectrum of equivalents ranging "from great to small to zero." *Hughes*, 717 F.2d at 1363.

Hughes initiated what came to be known as the "flexible bar" approach to prosecution history estoppel. Under this approach, the nature and purpose of amendments made during patent prosecution are examined, along with all accompanying circumstances, to determine the exact subject matter actually surrendered. Equivalents outside the surrendered material remain available to the patentee.

The flexible bar suffers from a fundamental lack of precision. Its foremost quality – flexibility – has made it resistant to any clear formulation that would permit predictability as to what subject matter, exactly, has been surrendered by an amendment or a series of amendments during prosecution.

Making this point in *Festo*, the Federal Circuit majority gave an example of a claim that originally recited a value of "less than twenty" and, in light of a rejection over prior art disclosing a value of fifteen, was amended to recite a value of "less than five." 234 F.2d at 577. Under the flexible bar, there is no means by which an inventor wishing to utilize values of five and a half, ten, or fourteen, or anything else between five and fifteen, could ascertain whether the patentee surrendered those potential equivalents. The precise range of equivalents encompassed by the patent, and thus not available for practice by the public, will remain uncertain until litigation somehow settles the matter. Accordingly, by virtue of its flexibility, the flexible bar defeats the notice function of patents by denying the public and would-be inventors notice of a patent's scope.

The flexible bar likewise fails to comport with constitutional and congressional patent policy by not encouraging innovation. A patent system that obfuscates the applicability of the doctrine of equivalents and, thus, whether an invention even arguably infringes a patent because of that doctrine, does not encourage innovation. Incremental innovation in the form of technological advancements is particularly discouraged, since few inventors can be expected to take an unquantifiable risk of being successfully sued for infringement. The flexible bar thus results in what this Court has previously referred to as a "zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims . . . [and which] discourage[s] invention only a little less than unequivocal foreclosure of the field." *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996) (quoting *Union Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236 (1942)), as quoted in *Festo*, 234 F.3d at 577. For these reasons and others, the Federal Circuit in *Festo* characterized the flexible bar as unworkable. *Festo*, 244 F.3d at 575-78.

Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.

In *Festo*, a majority of the Federal Circuit's judges determined that the problems associated with the flexible bar were too inconsistent with sound patent policy for that rule to remain law. *Festo* adopted instead an "absolute bar" approach to prosecution history estoppel. Under this approach, no range of equivalents is available to a patentee with respect to any claim element to which prosecution history estoppel applies. Thus, where a limiting amendment to a claim triggers prosecution history estoppel, the patentee may pursue an infringement action only where the accused device infringes on the literal terms of that element of the patent's claims. The *Festo* majority stated that the Federal Circuit had issued a decision reaching a similar result shortly after *Hughes* was decided, *Kinzenbaw v. Deere & Co.*, 741 F.2d 383 (Fed. Cir. 1984). The decision in that case, however, made no mention of overruling *Hughes*, and the flexible bar of *Hughes* became the dominant line of Federal Circuit authority – until *Festo*.[2]

The absolute bar's purpose is to undo the chilling effect created by its predecessor. In the view of the Federal Circuit, technological advancements in the undefined zone surrounding the literal terms of a narrowed claim will no longer go undeveloped for fear of litigation, and newfound certainty regarding the scope of prosecution history estoppel will stimulate productive advances through improvements on and designs around patented technology.

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2. Festo has been criticized for reducing the effective scope of existing patents and unfairly disrupting existing commercial relations. In his dissent below, Judge Michel suggested that a "grandfathering" provision should be made for existing patents that contain amended claim limitations and were introduced before the adoption of the absolute bar. *Festo*, 234 F.3d at 618-19 (Michel, J., concurring in part and dissenting in part).

Indisputedly, the absolute bar promotes the notice function of patents. Equally indisputable, however, is that the absolute bar also substantially compromises patents' protective function. This Court instituted and has repeatedly reaffirmed the validity of the doctrine of equivalents precisely because the doctrine is necessary to protect inventors from insubstantial modifications to patented devices that amount to little more than fraud on the patents. *See, e.g., Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997); *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950); *Winans v. Denmead*, 56 U.S. (15 How.) 330 (1854). By denying patentees who amend their claims during prosecution the power to prevent infringement accomplished by nonsubstantive yet literal variations from the amended language, a basic protection historically afforded patentees has been jettisoned in favor of better informing the public of a patent's literal scope.

This retooling of fundamental patent law concepts tips the balance between patents' protective and notice functions too far in the latter's favor. Perhaps because of the enormous volume of patents already issued by the Patent and Trademark Office, rejections of patent applications based on prior art or some other reason are routine, as are responsive amendments to demonstrate patentability. To hold that one who amends a claim while successfully prosecuting a patent has no ability to prevent others from copying the patented invention in all respects except for a minor variation to the narrowed claim effectively eviscerates the patent's protections.

Festo thus grossly disturbs the balance between patents' protective and notice functions, and, in doing so, *Festo* likewise distorts the patent system's incentives to innovate. The absolute bar encourages copyists to replicate a patented device, making otherwise meaningless modifications to the extent necessary to

avoid the literal language of the device's amended claims. Judge Michel, in his partial dissent, declared this procedure be a blueprint for lawful copying of patented material. 234 F.3d at 616-17 (Michel, J., concurring in part and dissenting in part).

The absolute bar also threatens to eliminate the incentive to produce socially valuable pioneering inventions. Any amendment to a pioneering invention's patent claims that relates to the device's patentability will prohibit the pioneering inventor from utilizing the doctrine of equivalents. By their nature, however, pioneering inventions open new avenues of progress, and it is along such avenues that the opportunity to make insubstantial modifications from a patent's literal language is greatest. Denying pioneering inventors the benefits of the doctrine of equivalents may, in many cases, render wasted the investment expended to produce such inventions.

Finally, under the absolute bar approach, all patented devices, whether themselves pioneering inventions or technological improvements, are subject to lawful copying to the extent that after-invented technology allows a copyist to substitute a new technology for a claimed technology and thereby avoid the patent claim's literal language. As Judge Rader pointed out in his partial dissent in *Festo*, this permits a patent's protective function to be wholly defeated by the introduction of an item that functionally serves as an element of a narrowed claim but that does not come within the claim's literal language. 234 F.3d at 619-20 (Rader, J., concurring in part and dissenting in part).

In sum, both the flexible bar and the absolute bar approaches to prosecution history estoppel fail to balance patents' protective and notice functions and to encourage both pioneering inventions and technological improvements. A middle ground is needed, and, in the following section, IEEE-USA proposes just such an approach.

II. Application of Prosecution History Estoppel Strikes An Appropriate Balance Of Patent Policies Only When The Limiting Effect Of An Amendment With Respect To An Accused Device Would Have Been Foreseeable At The Time Of The Amendment.

While it is uncontroverted that subject matter surrendered during prosecution of a patent should not be resurrected by broadly construing a patent's claims through the doctrine of equivalents, *see Prodyne Enterprises, Inc. v. Julie Pomerantz*, 743 F.2d 1581, 1583 (Fed. Cir. 1984) (quoting *Hughes*, 717 F.2d at 1362), the two suggested means of determining the scope of any such surrender – the flexible bar of *Hughes* and the absolute bar of *Festo* – fail to balance adequately patents' protective and notice policies. The IEEE-USA thus recommends an alternative solution. Notwithstanding a patentability-based limiting amendment to a patent's claims during prosecution, the doctrine of equivalents should be permitted to apply unless the limiting effect of the amended language with respect to an accused device would have been foreseeable at the time of the amendment.

Applied objectively, from the perspective of a reasonable person skilled in the art, this "foreseeable bar" applies principles that are readily, if not commonly, understood by both the public and the judiciary. The foreseeable bar rule is also consistent with and may harmonize relevant precedent from the Federal Circuit and this Court. Most importantly, the foreseeable bar rule provides both broader protection to the inventor than that provided by the absolute bar and more meaningful notice to the public than that provided by the flexible bar. The foreseeable bar thus better promotes innovation through pioneering inventions and technological improvements and, thereby, best promotes progress of the useful arts.

A. The Foreseeable Bar Rule Is Consistent With Patent Policies And Harmonizes The Precedent Of This Court And The Federal Circuit.

Foreseeability is a well understood concept of modern law. Thus, courts may draw upon long-established principles for guidance in determining whether a particular limiting effect was foreseeable at the time a limitation was made. Furthermore, the use of such principles is rooted in the case law of both this Court and the Federal Circuit. Indeed, by utilizing a foreseeable bar, cases from both courts limiting application of the doctrine of equivalents may in certain key respects be harmonized.

Foreseeabilty is a traditional jurisprudential device that is commonly used by courts to circumscribe legal principles in a manner that is flexible and yet objective and reasonably determinate. Thus, foreseeability is often used to determine, as a matter of law, the existence of a common law duty of care. *E.g.*, *Palsgraf v. Long Island R.R.. Co.*, 162 N.E. 99 (N.Y. 1928) (Cardozo, J.); *see, e.g.*, Peter F. Lake, *Common Law Duty in Negligence Law*, 34 San Diego L. Rev. 1053 (1997) (contrasting elements of modern no-duty rules among the states).

Likewise, foreseeability is commonly used as a measure to limit the scope of damages in civil contract actions. *Hadley v. Baxendale*, 156 Eng. Rep. 145 (1854) (consequential damages in contract). In patent cases, too, the Federal Circuit has utilized foreseeability as a means to measure damages. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538 (Fed. Cir. 1995) (en banc).

In the estoppel context, the contract doctrine of promissory estoppel requires proof that a promisor should reasonably have foreseen that his promise would induce

reliance by the person to whom the promise was made. RESTATEMENT (SECOND) OF CONTRACTS § 90 (1981). Similarly, this Court has specifically applied foreseeability to measure whether a defendant's offensive use of collateral estoppel is fair. *Parkland Hosiery Co. v. Shore*, 439 U.S. 322, 330 (1979) ("If a defendant in the first action is sued for small or nominal damages, he may have little incentive to defend vigorously, particularly if future suits are not foreseeable.").

More specific to the issues in this case, foreseeability has played a recognized role in effectuating patents' protective and notice functions. For instance, in *Kinzenbaw v. Deere & Co.*, 741 F.2d 383 (Fed. Cir. 1984), the Federal Circuit relied on its prior decision in *Hughes* and this Court's decision in *Graver Tank* to conclude that "the doctrine of equivalents is designed to protect inventors from unscrupulous copyists and *unanticipated equivalents*." *Id.* at 389 (emphasis supplied). Thus, the Federal Circuit held, a patent applicant is not required to predict "all future developments which enable the practice of his invention in substantially the same way." *Id.* (quoting *Hughes*, 717 F.2d at 1362). Turning to the facts before the court, *Kinzenbaw* found that the claimed variation was neither copied nor unanticipated, and the court held that prosecution history estoppel barred the patentee from relying on the doctrine of equivalents.

Kinzenbaw plainly suggested that, if the particular limiting effect created by the patentee's amendments to the patent's claim language had been unforeseeable, the doctrine of equivalents would still have been available to the patentee. Accordingly, *Kinzenbaw* relied squarely on foreseeability principles.

Foreseeability is also recognized in the Federal Circuit's decision in *Sage Products v. Devon Industries*, 126 F.3d 1420, 1425 (Fed. Cir. 1997). There, following this Court's command that "[t]he limits of a patent must be known," *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996), the Federal Circuit held that, "as between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for [a] *foreseeable alteration* of its claimed structure." 126 F.3d at 1425 (emphasis supplied).

Sage Products specifically held that a patentee may not utilize the doctrine of equivalents to reach a foreseeable modification to a claimed innovation. The court observed that allowing the doctrine of equivalents to encompass foreseeable variations to claims would create a "zone of uncertainty into which competitors tread only at their peril." *Id.* at 1425.

Thereafter, in *Festo*, the Federal Circuit relied extensively on the need for forseeability with respect to the scope of equivalents available to a patent's claims when the court held that limiting amendments based on patentability cannot be expanded beyond their literal language through the doctrine of equivalents. The *en banc* court emphasized that the flexible bar of *Hughes* made it "virtually impossible" to "predict[] with any degree of certainty the scope of surrender that will be found when prosecution history estoppel applies." 234 F.3d at 574-75.

Festo shows that foreseeability marks the conceptual juxtaposition of patents' protective and notice functions. Satisfactory notice to the public of a patent's scope is achieved where the public may foresee the limits of the protection that will be afforded a patent through application

of the doctrine of equivalents. Foreseeability is thus wholly consistent with, and, in fact, an essential component of, the basic functions of protection and notice that underlie the patent system. Viewed through the lens of foreseeability, the Federal Circuit's decisions in *Hughes*, *Kinzenbaw*, *Sage Products*, and *Festo* may be harmonized with respect to a balancing of the protection function and the notice function.

Not only is a focus on foreseeability to determine a limiting amendment's effect consistent with the Federal Circuit's case law, it is not inconsistent with this Court's prosecution history estoppel decision in *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126 (1942). In *Exhibit Supply*, the Court held that a patentee who selected limiting language to amend a claim while prosecuting the patent had thereby "recognized and emphasized the difference" between the original claim and an amended claim "and proclaimed his abandonment of all that is embraced in that difference." *Id.* at 136-37. The Court made no suggestion that the patentee's abandonment extended to equivalents that could not reasonably be foreseen. To the contrary, the Court's language suggested that the patentee specifically abandoned equivalents that should reasonably have been recognized when the patentee made the limiting amendment.

In sum, foreseeability is a well established concept in modern law that is consistent with, if not an essential component of, the basic patent functions of protection and notice. The concept is also well rooted in connection with limitations on the doctrine of equivalents, as the Federal Circuit expressly utilized foreseeability for this purpose in *Kinzenbaw* and *Sage Products*, and the decisions in *Hughes*, *Festo*, and *Exhibit Supply* may reasonably be viewed as efforts to limit the doctrine of equivalents in accordance with foreseeability. Accordingly, the use of foreseeability to limit application of the doctrine of equivalents is supported by existing case law.

B. The Foreseeable Bar Rule Overcomes the Failings Of The Absolute Bar And The Flexible Bar.

The foreseeable bar advanced by the IEEE-USA holds that, notwithstanding a patentability-related amendment to a patent's claims during prosecution, the doctrine of equivalents will be applied unless the limiting effect of the amended language with respect to an accused device would have been foreseeable at the time of the amendment to a reasonable person skilled in the art. The foreseeable bar avoids each "parade of horribles" posited by respective opponents of the flexible bar and the absolute bar, while simultaneously effectuating and balancing the patent policies advanced by their respective advocates. Thus, the foreseeable bar is not only fair, it overcomes the considerable failings of both the flexible and the absolute bars and best satisfies the fundamental constitutional policy of promoting the useful arts.

To begin, application of the foreseeable bar is eminently fair. Where the limiting effect of an amendment's language with respect to an accused device should have been foreseen by a person reasonably skilled in the art, the patentee should not be permitted to ignore that effect by utilizing the doctrine of equivalents to expand a patent's claims to encompass subject matter that, by all reasonable appearances, was abandoned during the patent's prosecution. Instead, the patentee should be estopped to assert equivalence.

On the other hand, where the limiting effect of an amendment's language with respect to an accused device could not have been objectively foreseen at the time of the amendment – perhaps because the significance of the limitation was obfuscated by the "subtlety of language or complexity of the technology, [or a] subsequent change in the state of the art, such as later-developed technology,"

Sage Products, 126 F.3d at 1425 – refusing to apply the doctrine of equivalents unfairly deprives the patentee of protection that this Court has repeatedly deemed essential to a meaningful right of exclusivity under the patent system. To impose a consequence on a patentee based ostensibly on the intent underlying the patentee's actions, but where those actions do not reasonably support any such intent, is the antithesis of fairness.

In this way, the foreseeable bar overcomes the substantial failings of the absolute bar. As shown in Part I-C, *supra*, the absolute bar is unworkable and constitutionally ineffective because it permits competitors to utilize subject matter that effectively works a fraud on a patent. Under the absolute bar, only trivial innovations, if not pure copies, are encouraged, while the creation of pioneering innovations is directly discouraged. Under the foreseeable bar, these harsh consequences are largely avoided.

The foreseeable bar prohibits use of the doctrine of equivalents only where the objective inference to be drawn from the patentee's choice of language shows that the equivalent subject matter in the infringing device was in fact abandoned during the patent's prosecution, thus opening the door to competitors' lawful use of that subject matter. Invention of pioneering innovations is not discouraged, and trivial innovations are not disproportionately encouraged, because the foreseeable bar permits the doctrine of equivalents to remain available to patentees even if, as is often the case, a patent's claims are amended for reasons related to patentability.

Significantly, the foreseeable bar rule also permits ready and fair resolution to the problem of after-arising technology. In *Festo*, Judge Rader specifically criticized the absolute bar by noting that it permits competitors to "have unfettered

license to appropriate all patented technology [that uses] outdated terms" in the face of subsequently developed technology. *Festo*, 234 F.3d at 619 (Rader, J., concurring in part and dissenting in part) (noting that the terms "cathode" and "anode" for vacuum-tube instruments gave way to literally distinguishable "collectors" and "emitters" after the invention of the transistor). The foreseeable bar permits patent protection when insubstantial changes are made using after-invented technology that could not have been foreseen at the time of an amendment.

Further, the foreseeable bar permits patent protection where subtleties of language or inherent complexity of a technology is exploited to avoid the literal language of a patent's claims by substitution of a substantial equivalent. In those cases as well, the foreseeable effect of the limiting language governs.

In his partial dissent in *Festo*, Judge Michel raised concerns that the absolute bar provided a blueprint for lawful copying of patented material. 234 F.3d at 616-17 (Michel, J., concurring in part and dissenting in part). The foreseeable bar addresses this concern to the extent that the limiting effect of an amendment with respect to an accused device was not foreseeable. Where foreseeability is found, the patentee is deemed to have intended to abandon that particular equivalent, and thus neither patent law nor fundamental fairness is offended by the competitor's use of the equivalent subject matter or by the application of prosecution history estoppel to the patentee.

Importantly, the foreseeable bar avoids not only the failings of the absolute bar but the failings of the flexible bar. As also discussed in Part I-C, *supra*, the flexible bar is unworkable and constitutionally ineffective because the public cannot reasonably predict the outcome of its

application in a particular case and, as a result, incremental innovations in the form of technological improvements are improvidently discouraged. The foreseeable bar eliminates these concerns by eliminating the flexible bar's unbounded and variable inquiry and replacing it with a straightforward and measurably more predictable foreseeability test.

To return to the example used by the majority in *Festo*, where a claim for "less than twenty" is amended to "less than five" in view of prior art disclosing a value of fifteen, the reasonable person skilled in this particular art would foresee that equivalents using a value over five were abandoned by the language of the limiting amendment, absent some extraordinary circumstance. This would permit a district court to determine, and a reviewing court to confirm, that, as a matter of law, prosecution history estoppel barred the patentee's infringement claim against an alleged infringer who utilized a value of five and a half, based on an objective view of the meaning and effect of the amended language itself.

By comparison, as the *Festo* majority complained, the flexible bar calls for a pliable examination of a series of extraneous factors. Consequently, an inventor wishing to improve a device through a meaningful technological innovation that was arguably an equivalent to the amendment's literal language could not predict in advance whether, under that test, a court would apply prosecution history estoppel to the patentee or permit a jury trial on equivalence. Lawful innovations may never reach fruition merely because the uncertainty of the existing patent's scope presents too great a litigation risk. This result is inconsistent with promoting progress, and it is unnecessary in light of the more predictable alternative of the foreseeable bar.

In particular, while the foreseeable bar is not a bright line rule like the absolute bar, it provides a concise test that is both flexible and readily comprehensible to both the public and to the district court judges who must apply it. Under the flexible bar of *Hughes*, a judge must not only consider a claim construction, but the panoply of issues relating to a study of prosecution history, validity in view of the prior art cited and of record and the totality of the circumstances under which the application was amended to determine the entire scope of equivalents remaining after the amendment. The judge must then formulate that scope of equivalents and then either apply it to the accused device or relate it to a jury through an instruction that, like the claims themselves, may be constrained by the limitations of language in conveying the inventive idea. On appeal, the reviewing court must revisit all of the factors considered below and may well view their totality in a way different from the trial judge's view, which ensures that in each case the ultimate resolution of the estoppel question will remain uncertain until the appeal is concluded.

In contrast, a foreseeable bar asks the trial judge only whether the limiting effect of an amendment's language as applied to exclude an accused device from literal infringement was foreseeable at the time of the amendment. Foreseeability, in general, is a consummate common law principle with which judges are intimately familiar. Unlike the flexible bar, the foreseeable bar is more focused, limiting the inquiry as a matter of law to a particular limiting effect of particular claim language with respect to a particular accused device. The bases for the trial judge's conclusion can be readily articulated in an opinion, which in turn can be readily reviewed as a matter of law by an appellate court.

Ultimately, the foreseeable bar is more equitable than the absolute bar and more certain than the flexible bar. As a matter of constitutional policy, then, the foreseeable bar presents the best means of promoting progress of the useful arts and should be adopted by this Court as the relevant inquiry in determining when a patentee is estopped to rely on the doctrine of equivalents.

It remains only to note that, if adopted by this Court, the foreseeable bar would be amenable to case-by-case development by the lower courts to ensure equity and compliance with the constitutional purposes of the patent system. In sharp contrast, the bright-line rule of *Festo* all but forecloses the opportunity for further refinement where its results prove unjust, and, despite twenty years of case-by-case development, the flexible bar has remained sufficiently unmoored to firm principles that it has never overcome its unpredictable and inequitable nature. Thus, unlike the absolute and flexible bars, a foreseeable bar would facilitate the capacity of courts below to best "implement procedural improvements to promote certainty, consistency, and reviewability to this area of the law." *Warner-Jenkinson*, 520 U.S. at 39 n.8.

CONCLUSION

The Patent Act should be interpreted to promote the purposes set forth in the Patent Clause and the policies established thereunder by Congress. With respect to prosecution history estoppel, both the absolute bar and the flexible bar rules fail to balance those concerns adequately, with each being marred by its own substantial shortcomings.

Unlike the absolute and flexible bars, the foreseeable bar described in this brief is easily grasped and applied, assures both fundamental fairness and predictability, and is consistent with patent law policies and case law of this Court and the Federal Circuit. Accordingly, the IEEE-USA respectfully submits that progress is best promoted, and the patent functions of protection and notice are best balanced to encourage all forms of invention, by enforcing prosecution history estoppel through the foreseeable bar.

Respectfully submitted,

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